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Daniele Bonnet-Delpon

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Jean Louis Seugnet
Rhodia Inc CN 7500
Intellectual Property Department
259 Prospect Plains Road
Cranbury, NJ 08512-7500

EXAMINER

DAVIS, BRIAN J

ART UNIT

PAPER NUMBER

1621

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Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION***Specification***

The disclosure is objected to because of the following informalities: the specification contains errors and/or apparent inconsistencies. For instance, it appears that the structure on page 9 of the specification is incomplete (missing NH₂). It also appears that example 10 contains two separate syntheses. It is unclear why this is so unless, perhaps, there is a lacuna in the text. It is also unclear why the text of the specification explicitly and repeatedly refers to a "difluoromethyl" while the supporting examples are, consistently, trifluoromethyl compounds. Appropriate clarification of all points above is required

The examiner also respectfully requests applicant's assistance in correcting any other minor errors/inconsistencies that might appear in the specification, including errors of grammar and spelling.

Claim Rejections - 35 USC § 112, FIRST PARAGRAPH

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 15-17 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for compounds of formula I, does not reasonably provide enablement for "a compound comprising at least one carbon bearing an amine

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function, and allyl or propargyl radical, a difluoromethylene group and a hydrogen or hydrocarbon-based radical which is electron donating or weakly electron-withdrawing with a $\sigma_p \leq 0.2$ ". The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

With regard to rejections under 35 USC 112, first paragraph, the following factors are considered (*In re Wands* 8 USPQ 2d 1400, 1404 (CAFC 1988)): a) Breadth of claims; b) Nature of invention; c) State of the prior art; d) Level of ordinary skill in the art; e) Level of predictability in the art; f) Amount of direction and guidance provided by the inventor; g) Working examples and; h) Level of experimentation needed to make or use the invention based on the content of the disclosure.

a) The claim is incredibly broad. In fact, only one atom (a carbon atom) and its substituents is even remotely defined – and those definitions are simply broad classes of substituents – of a possibly much larger molecule (...30 carbon atoms (claim 17)).

b,c) The nature of the invention is determined in part by the state of the prior art. The prior art in general teaches compounds and methods relating to that of the instant invention. That is, compounds, their synthesis and method of use are all explicitly defined and limited by the explicit and detailed structures of the compounds themselves.

d) The level of skill in the art is considered to be relatively high.

e) The level of predictability in the art is considered to be relatively low. Even under the best of circumstances, and several hundred years after Lavoisier laid the foundations of its modern practice, chemistry remains an experimental science. The

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chemical arts have not advanced to the point where certainty has replaced the need for laboratory experimentation.

f,g)The amount of direction provided by the inventor is considered to be determined by the specification and the working examples. Applicant provides a narrow set of exemplified compounds all of which are closely structurally related (Examples 1-12).

h)It is not possible to make and use the instant invention without an undue level of experimentation. The breathtaking scope of applicant's claims simply strains credulity. Applicant's examples cannot reasonably be extrapolated to encompass the instant universe of compounds. The specification must teach how to make and use the invention, not how to figure out for oneself how to make and use the invention. *In re Gardner*, 166 USPQ 138 (CCPA 1970).

Claim 18 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for specific, very narrow examples of imine and allyl starting compounds, used to synthesize compounds of formula I, does not reasonably provide enablement for "reacting an allyl organometallic on and imine bearing difluoromethylene groups" to yield compounds of formula I. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

As above, with regard to rejections under 35 USC 112, first paragraph, the following factors are considered (*In re Wands* 8 USPQ 2d 1400, 1404 (CAFC 1988)).

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a)The claim is incredibly broad: the universe of allyl organometallic compounds reacted with the universe of imine-bearing difluoromethylene groups.

b,c)The nature of the invention is determined in part by the state of the prior art. The prior art in general teaches compounds and methods relating to that of the instant invention. That is, compounds, their synthesis and method of use are all explicitly defined and limited by the explicit and detailed structures of the compounds themselves.

d)The level of skill in the art is considered to be relatively high.

e)The level of predictability in the art is considered to be relatively low. Even under the best of circumstances, and several hundred years after Lavoisier laid the foundations of its modern practice, chemistry remains an experimental science. The chemical arts have not advanced to the point where certainty has replaced the need for laboratory experimentation.

f,g)The amount of direction provided by the inventor is considered to be determined by the specification and the working examples. Applicant provides a narrow set of exemplified compounds all of which are closely structurally related (Examples 1-7) and all of which are synthesized from specific, very narrow examples of imine and allyl starting compounds.

h)It is not possible to make and use the instant invention without an undue level of experimentation. The breathtaking scope of applicant's claims simply strains credulity. Applicant's examples cannot reasonably be extrapolated to encompass the instant universe of starting compounds. The specification must teach how to make and

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use the invention, not how to figure out for oneself how to make and use the invention.

In re Gardner, 166 USPQ 138 (CCPA 1970).

Claim Rejections - 35 USC § 112, SECOND PARAGRAPH

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 15-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The exact nature of the compound is unclear because it is undefined – except for one atom (a carbon atom) and its substituents – and those definitions are simply broad classes of substituents – of a possibly much larger molecule (...30 carbon atoms (claim 17)).

Claims 18 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See PEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by

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such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, and 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, the claims recite, in the definition of R_3 , the broad recitation "alkyl," and the claims also recite "including a alkyl..." which is the narrower statement of the range/limitation.

Additionally, claims 18 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention because it is unclear, in the definition of R_3 , how are R_3 and R_4 can form an "additional" double bond. Does applicant wish to suggest that a propargyl radical, in some fashion, consists of two (isolated?) double bonds, or perhaps a quadruple bond? Either choice would seem incorrect: the first because it is inconsistent with the definition of a propargyl radical and the second because it is inconsistent with valence bond theory. Variable R is also undefined.

Additionally, claims 18 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention because there is no antecedent basis for the limitation "said Ar group" in the definition of R_5 and R_4 .

Additionally, claims 18 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the

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subject matter which applicant regards as the invention because it is unclear exactly what might be the "specific trivalent, nitrile or acid function" substituent in the definition of R_1, R_2, R_4, R_3 and R_5 .

Additionally, claims 18 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention because it is unclear exactly what the starting materials of the reaction might be (...reacting an allyl organometallic on an imine bearing difluoromethylene groups...). These sets of starting materials are simply broad sets of general chemical classes.

Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The exact nature of a "Barbier" technique is unclear because it is undefined.

Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The exact nature of the "hydrocarbon-based radical which is electron donating or weakly electron-withdrawing" is unclear because it is undefined. That is, the substituent is defined simply by properties it must have, not by what it is. The specification must teach how to make and use the invention, not how to figure out for oneself how to make and use the invention. *In re Gardner*, 166 USPQ 138 (CCPA 1970).

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Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As above, a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. In the present instance, the claim recites the broad recitation "at least equal to 10," and the claim also recites "optionally at least equal to 20," which is the narrower statement of the range/limitation.

Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The exact nature of the compound of formula IV is unclear because it is undefined.

Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The exact nature of the GEA substituent is unclear because it is undefined. That is, the substituent is defined simply by properties it must have, not by what it is. The specification must teach how to make and use the invention, not how to figure out for oneself how to make and use the invention. *In re Gardner*, 166 USPQ 138 (CCPA 1970).

Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant

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regards as the invention. There is no antecedent basis for the limitation " C_v, F_{v+1} " in the definition of Rf.

Claim 28 provides for the use of a compound of formula (I) in a process for cyclizing metathesis, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

The remaining claims are also rejected under 35 USC 112, second paragraph, as claims which depend from indefinite claims are also indefinite. *Ex parte Cordova*, 10 USPQ 2d 1949, 1952 (PTO Bd. App. 1989).

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 28 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 15-17 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by *Chemistry Letters* (1989), 11, p. 1987-1988 (CAPLUS abstract). Applicant's compounds are old and well known in the chemical arts. For instance, the cited reference teaches examples of applicant's compounds: RN=127560-68-3 and 127560-75-2.

Claims 18, 20, 21 and 24-27 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by *Tetrahedron Letters* (1990), 31(29), p. 4143-4144. The reference teaches applicant's reaction of a "allyl organometallic on an imine bearing difluoromethylene" (page 4143 second diagramed reaction).

Claims 18, 20, 21 and 24-27 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by *Journal of Organic Chemistry* (1968), 33(3), p. 1002-1008. The reference teaches applicant's reaction of a "allyl organometallic on an imine bearing difluoromethylene" (page 1006, Table III).

Claims 18, 20, 21 and 24-27 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by *Journal of Organic Chemistry* (1996), 61(21), p. 7521-7528. The reference teaches applicant's reaction of a "allyl organometallic on an imine bearing difluoromethylene" (page 7523, Scheme 7, Table 1 entry 9).

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Claims 28 and 29 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by *Eur. J. Org. Chem.* (2001), p. 3891-3897. The reference teaches a process for cyclizing metathesis using applicant's compound (Results section).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Davis whose telephone number is 571-272-0638. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thurman K. Page can be reached on 571-272-0602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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BRIAN DAVIS
PRIMARY EXAMINER

Brian J. Davis

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